



A new approach of the rupture process of the great earthquakes using images derived from hydroacoustic or infrasound array processing

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The study of the source of major earthquakes is of great interest for the scientific community because the parameters derived from have a major importance for the rapid estimation of associated effects (destruction or tsunami). In the framework of these studies, we have identified the array processing as a modern tool that can provide vital information on the geometry and the kinematics of the rupture. Thanks to the various technologies implied in the CTBT, we have brought these studies in the field of seismology, infrasound and hydroacoustic. These different approaches have resulted in either a direct visualization of the rupture thanks to the analysis of variations of azimuth with time of direct waves from the source or indirectly by obtaining the scope of radiation pattern of surface waves. This type of image is very innovative because it allows provide information on geographic areas which are not instrumented. We show multiple images of treatment PMCC (Progressive Multi Channel Correlation) associated with different major earthquakes as Sumatra Mw=9.3, Nias Mw=8.7, Kokoxoli Mw=7.8, Tohoku Mw=9.0 and how we can constrain the rupture of these events.

These studies show the interest of the CTBT network and more precisely the dense arrays of sensors. These arrays offer the unique opportunity for a multi-technological approach of the seismic source and, perhaps, ultimately, the improvement of warning systems.